CLAIMS:

1. An X-ray controlling method for an X-ray imaging apparatus for projecting X-rays from an X-ray tube onto a subject to be imaged and detecting transmitted X-rays, and producing an image based on detected X-ray signals, comprising the steps of:

setting an upper limit of an X-ray exposure dose to the subject to be imaged; and

modulating the tube current of the X-ray tube so that the exposure dose does not exceed the upper limit.

2. The X-ray controlling method of claim 1, wherein said X-ray imaging apparatus is an X-ray CT apparatus.

3. The X-ray controlling method of claim 2, wherein said X-ray CT apparatus conducts imaging by a helical scan.

4. The X-ray controlling method of claim 2, wherein said step of modulating the tube current is achieved by: finding an exposure dose predicted value based on an imaging protocol; and modifying the tube current set value in the imaging protocol when the predicted value exceeds said upper limit.

5. The X-ray controlling method of claim 4, wherein said tube current set value is specified for each slice position.

6. The X-ray controlling method of claim 5, wherein said step of modulation is achieved by modifying a tube current set value I to

$$I' = I \cdot (Du / Dc)^{1/2},$$

where said predicted value is denoted by Dc, and said upper limit is denoted by Du.

7. An X-ray imaging apparatus for projecting X-rays from an X-ray tube onto a subject to be imaged and detecting transmitted X-rays, and producing an image based on detected X-ray signals, comprising:

a setting device for setting an upper limit of an X-ray exposure dose to the subject to be imaged; and

a modulating device for modulating the tube current of the X-ray tube so that the exposure dose does not exceed the upper limit.

8. The X-ray imaging apparatus of claim 7, wherein said X-ray imaging apparatus is an X-ray CT apparatus.

9. The X-ray imaging apparatus of claim 8, wherein said X-ray CT apparatus conducts imaging by a helical scan.

10. The X-ray imaging apparatus of claim 8, wherein said modulating device finds an exposure dose predicted value based on an imaging protocol, and modifies the tube current set value in the imaging protocol when the predicted value exceeds said upper limit.

11. The X-ray imaging apparatus of claim 10, wherein said tube current set value is specified for each slice position.

12. The X-ray imaging apparatus of claim 11, wherein said modulating device modifies a tube current set value I to

$$I' = I \cdot (Du / Dc)^{1/2},$$

where said predicted value is denoted by Dc, and said upper limit is denoted by Du.

13. An X-ray imaging apparatus for projecting X-rays from an X-ray tube onto a subject to be imaged and detecting transmitted X-rays, and producing an image based on detected X-ray signals, comprising:

a calculating device for calculating a historical X-ray exposure dose to the subject to be imaged; and

a display device for displaying the calculated exposure dose.

14. The X-ray imaging apparatus of claim 13, wherein

said calculating device calculates the exposure dose based on historical imaging data for the subject to be imaged.

15. The X-ray imaging apparatus of claim 14, wherein

said calculating device acquires the historical imaging data from a server.

16. The X-ray imaging apparatus of claim 13, wherein

said X-ray imaging apparatus is an X-ray CT apparatus.